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Assessment Report
AWAF 3 Discharge Pipeline and Dam on
Lot 5 WT217

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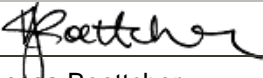
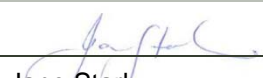
Aurecon Australia Pty Ltd
 ABN 54 005 139 873
 Level 14, 32 Turbot Street
 Brisbane QLD 4000
 Locked Bag 331
 Brisbane QLD 4001
 Australia

T +61 7 3173 8000
F +61 7 3173 8001
E brisbane@aurecongroup.com
W aurecongroup.com

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Name		Name	
Vanessa Boettcher		Jane Stark	
Title		Title	
Ecologist		Environmental Scientist	

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Aurecon Australia Pty Ltd
ABN 54 005 139 873

Level 14, 32 Turbot Street
Brisbane QLD 4000

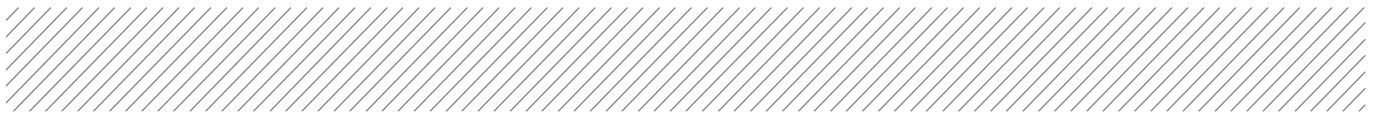
Locked Bag 331
Brisbane QLD 4001
Australia

T +61 7 3173 8000

F +61 7 3173 8001

E brisbane@aurecongroup.com

W aurecongroup.com



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1 Background

1.1 Project Description

Santos Ltd (Santos) have commissioned Aurecon Australia Pty Ltd (Aurecon) to undertake ecological investigations of proposed areas of development for the expansion of the Fairview Gas Fields.

The Fairview gas fields are situated approximately 40km from Injune in southern Queensland. This area is characterised by elevated sandstone ranges including the Carnarvon and Expedition Ranges and part of the Mount Hutton and Kongabula Ranges. The Dawson River and other smaller watercourses drain this area and the vegetation is dominated by Eucalyptus and White Cypress Pine woodland, Brigalow and Semi-evergreen Vine Thicket (Eddie, 2007).

Much of this area has been subjected to cattle grazing and other agricultural practices as well as previous development associated with the gas fields.

This report is specific to the proposed development areas known as the AWAFF 3 Discharge Pipeline and AWAFF 3 Dam.

1.2 Purpose of Report

The aim of this report is to provide an ecological assessment of the proposed development located on Lot 5 WT217 which is specified in Figure 3.1 and to identify areas and species of notable ecological or conservation value. This report does not make any recommendations regarding the development in relation to any Santos environmental authorities or other approvals.



2 Methodology

2.1 Desktop Methodology

Proposed development areas have been projected on a range of maps provided by Santos. These maps include Regional Ecosystem (RE) Mapping (version 6.0; Department of Environment and Resource Management [DERM]), Environmentally Sensitive Area (ESA) mapping, drainage mapping and aerial photography. Where available ahead of time, these resources were reviewed to determine target areas for the field inspection. It is important to note that the RE classifications used in this report are based on the 'biodiversity status' of the vegetation and not the '*Vegetation Management Act 1999* (VM Act) status' of the vegetation.

2.2 Field Methodology

The proposed development areas were assessed by three (3) Aurecon ecologists (Vanessa Boettcher, Jane Stark and Cassandra Arkinstall) on 3 and 9 November 2011. These assessments were to determine the existing vegetation communities and habitat value of the proposed clearing within the development areas as well as to verify the RE Mapping as produced by DERM.

GIS environmental constraints layers (eg RE Mapping, ESA mapping etc) and high resolution aerial photography were uploaded onto a toughbook (C5 mobile clinical assistant CFT-001 – Motion computing), with an integrated GPS used to locate surveys areas. Handheld Garmin GPS units (GPS map 76) were also used during the field investigations. It should be noted that while efforts were made to ensure the GPS co-ordinates provided in this report are accurate, a margin of error approximately +/- 15 m is expected due to the limitations of the devices used and the recording environment.

The areas assessed were of varying widths and lengths as shown in Figure 3.1.

The ground-truthing of the proposed development areas included undertaking detailed flora species surveys including sampling of unknown flora, and recording all incidental fauna observations. All species known to be of conservation significance (such as endangered, vulnerable, near threatened or Type A species under the *Nature Conservation Act 1992* [NC Act] or endangered, vulnerable or rare species under the *Environment Protection and Biodiversity Conservation Act 1999* [EPBC Act]) were recorded using the toughbook.

A list of flora species observed in the proposed development areas has been included in Appendix A. Incidental fauna observations are provided in the relevant sections throughout this report.

3 Ecological assessment

3.1 AWAFF 3 Discharge Pipeline and Dam

General

The proposed AWAFF 3 discharge pipeline and dam (hereafter referred to as 'the development areas') are located in a highly disturbed environment which is currently mapped as non-remnant vegetation on the DERM RE mapping (see Figure 3.1). This was confirmed during field inspections.

No ESA's are located within the development areas. The nearest ESA is located approximately 1 km to the north and is a Category C ESA (Of Concern vegetation).

One mapped watercourse occurs within the proposed development area. This is a stream order one watercourse and is located at the southern extent of the development area.

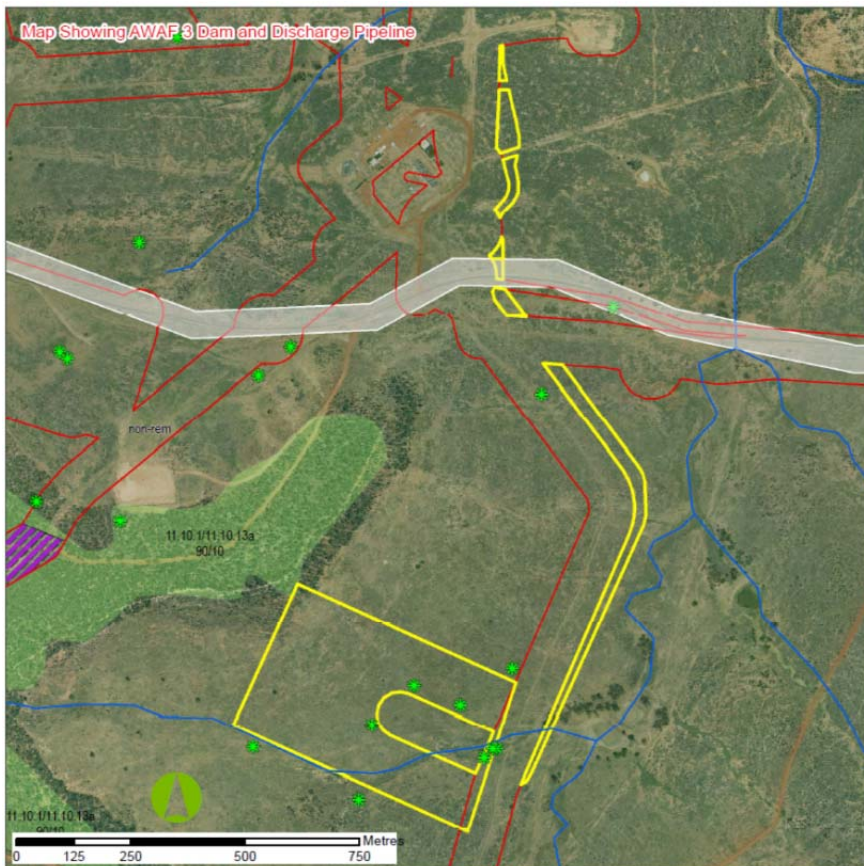


Figure 3.1.1 Location of the proposed AWAFF 3 Discharge Pipeline and Dam

Floristics

The area of the proposed quarry development has been extensively cleared previously and is currently dominated by shrubby regrowth vegetation with isolated mature trees present. The regrowth vegetation is dominated by *Eucalyptus populnea* (Poplar Box) and *Acacia leiocalyx* (Black Wattle). The ground layer is predominantly native grasses including *Aristida calycina* (Dark Wiregrass), *Aristida caput-medusae* (Many Headed Wiregrass), *Dicanthium sericeum* (Queensland Bluegrass) and *Chloris pectinata* (Comb Chloris). The northern section of the development area near compressor site 1 contained a higher prevalence of *Pennisetum ciliare* (Buffel Grass) than the southern areas. Refer to Appendix A for a full list of flora observed at the development areas.

The watercourse within the development areas does not contain any notable riparian vegetation.

Multiple Type A restricted plants under the provisions of the NC Act were observed within the proposed development area. Details of the locations of the species is outlined in Table 3.1 and illustrated in Figure 3.1.

Table 3.1 Type A restricted plants observed within the proposed development area

Species	Easting (GDA94, Zone 55)	Northing (GDA94, Zone 55)
<i>Brachychiton populneus</i>	693442	7164142
<i>Brachychiton populneus</i>	693462	7164162
<i>Brachychiton populneus</i>	693462	7164162
<i>Brachychiton populneus</i>	693196	7164215
<i>Brachychiton populneus</i>	693390	7164258
<i>Brachychiton populneus</i>	693288	7164301

No other species of conservation significance under the NC Act and/or EPBC Act were observed within the proposed development area.

Habitat Values

The habitat values of the proposed development areas are considered low due to the lack of mature vegetation, limited woody debris and high level of previous disturbance. No significant habitat features such as tree hollows or rocky outcrops were evident in the proposed development area.

Accordingly, the species utilising resources in the proposed development region are most likely to be limited to common, generalist species that are able to adapt to significant habitat disturbances (ie House mouse [*Mus musculus*], macropods etc).

Incidental fauna species recorded at the quarry site are outlined in Table 3.2. No threatened fauna species under the NC Act and/or EPBC Act were observed at the site.

Table 3.2 Fauna species recorded at the proposed quarry site

Scientific Name	Common Name
<i>Smicrornis brevirostris</i>	Weebill
<i>Taeniopygia bichenovii</i>	Double Barred Finche
<i>Macropus giganteus</i>	Eastern Grey Kangaroo



4 Conclusion

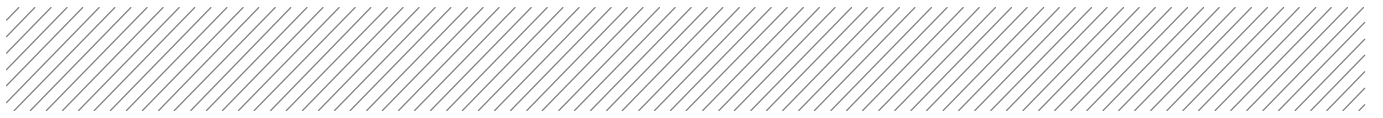
The proposed development areas addressed in this report are situated in disturbed environments which do not contain any remnant vegetation.

No ESA's are mapped within any of the development sites.

One stream order one watercourse is located at the southern extent of the development area.

Multiple Type A restricted plants were observed in the development area.

No threatened fauna species were recorded.



Appendix A

Flora Species List

Flora Species List

Scientific Name	Common Name	Notes
<i>Abutilon oxycarpum</i>	Chinese Lantern	
<i>Acacia complanata</i>	Velvet Wattle	
<i>Acacia excelsa</i>	Ironwood	
<i>Acacia harpophylla</i>	Brigalow	
<i>Acacia juncifolia</i>	Rush-leaved wattle	
<i>Acacia leiocalyx</i>	Black Wattle	
<i>Acacia salicina</i>	Sally Wattle	
<i>Acacia shirleyi</i>	Lancewood	
<i>Alectryon diversifolius</i>	Scrub Boonaree	
<i>Allocasuarina inophloia</i>	Stringybark She-oak	
<i>Allocasuarina leuhmannii</i>	Bull Oak	
<i>Alternanthera dentata</i>	Joyweed	
<i>Anagallis arvensis</i>	Scarlet Pimpernel	
<i>Aristida calycina</i>	Dark Wiregrass	
<i>Aristida caput medusae</i>	Many Headed Wire Grass	
<i>Atalaya hemiglauca</i>	Whitewood	
<i>Austrodanthonia tenuior</i>		
<i>Austrostipa verticillata</i>	Slender Bamboo Grass	
<i>Bothriochloa decipiens</i> var. <i>decipiens</i>	Pitted Bluegrass	
<i>Bothriochloa ewartiana</i>	Desert Blue Grass	
<i>Brachychiton populneus</i>	Kurrajong	Type A restricted plant
<i>Brachychiton rupestris</i>	Narrow Leaved Bottle Tree	Type A restricted plant
<i>Brachyscome dentata</i>	Lobe Seed Daisy	
<i>Callitris glaucophylla</i>	White Cypress Pine	
<i>Calocephalus platycephalus</i>	Billy Buttons	

Scientific Name	Common Name	Notes
<i>Calotis cuneifolia</i>	Purple Burr Daisy	
<i>Calotis lappulacea</i>	Yellow Burr Daisy	
<i>Capparis lassiantha</i>	Nipan, Wait a while	
<i>Carissa ovata</i>	Currant Bush	
<i>Cheilanthes sieberi</i>	Mulga Fern	
<i>Chloris sp.</i>	Windmill grass	
<i>Chloris virgata</i>	Silky Topped Rhodes Grass	
<i>Chrysocephalum apiculatum</i>	Yellow Buttons	
<i>Cirsium vulgare</i>	Spear Thistle, Black Thistle	
<i>Conyza bonariensis</i>	Fleabane	
<i>Corymbia trachyphloia</i>	Small fruited bloodwood	
<i>Cymbopogon refractus</i>	Barbwire Grass	
<i>Cynodon dactylon</i>	Green Couch	
<i>Davesia filipes</i>	Davesia	
<i>Dianella cerulea</i>	Dianella	
<i>Dianella longifolia</i>	Dianella	
<i>Dichanthium sericeum</i>	Queensland Blue Grass	
<i>Dodonaea viscosa</i>	Sticky Hopbush	
<i>Einadia hastans</i>	Saltbush	
<i>Entolasia stricta</i>	Wiry Panic	
<i>Eragrostis brownii</i>	Browns Lovegrass	
<i>Eragrostis fallax</i>	Tall Lovegrass	
<i>Eragrostis sororia</i>	Blue eragrostis	
<i>Eremophila debilis</i>	Winter Apple	
<i>Eremophila mitchellii</i>	False Sandalwood	
<i>Eucalyptus crebra</i>	Narrow Leaved Ironbark	
<i>Eucalyptus fibrosa</i> subsp. <i>nubila</i>	Blue-leaved Ironbark	

Scientific Name	Common Name	Notes
<i>Eucalyptus melanophloia</i>	Silver Leaved Ironbark	
<i>Eucalyptus orgadophila</i>	Mountain Coolibah	
<i>Eucalyptus populnea</i>	Poplar Box	
<i>Eucalyptus sp. (junevile)</i>	Eucalyptus (juvenile)	
<i>Eulalia aurea</i>	Silky Brown Top Grass	
<i>Ficus rubiginosa</i>	Moreton Bay Fig	
<i>Geijera parviflora</i>	Wilga	
<i>Glycine tabacina</i>	Glycine	
<i>Gomphocarpus physocarpus</i>	Balloon Cotton Bush	
<i>Goodenia rotundifolia</i>	Goodenia	
<i>Grevillea striata</i>	Beefwood	
<i>Heliotropium amplexicaule</i>	Blue heliotrope	
<i>Heteropogon contortus</i>	Black Spear Grass	
<i>Lepidium sagittulatum</i>	Pepper Cress	
<i>Leptospermum neglectum</i>	Leptospermum	
<i>Maireana microphylla</i>	Small-leaf Bluebush	
<i>Malvastrum americanum</i>	Spiny Malvastrum	
<i>Melichrus urceolatus</i>	Urn-heath	
<i>Melinis repens</i>	Red Natal	
<i>Neptunia glauca</i>	Neptunia	
<i>Opuntia stricta</i>	Prickly Pear	Class 2 declared weed
<i>Opuntia tomentosa</i>	Velvety Tree Pear	Class 2 declared weed
<i>Ottochloa gracillima</i>	Pademelon Grass	
<i>Panicum decompositum</i>	Hairy Panic	
<i>Parsonsia lanceolata</i>	Monkey Rope	
<i>Pennisetum ciliare</i>	Buffel Grass	
<i>Plantago lanceolata</i>	Lamb's tongue	

Scientific Name	Common Name	Notes
<i>Podolepis jaceoides</i>	Showy Copper Wire Daisy	
<i>Psidium oleifolium</i>	Hat stand, Wild Lemon	
<i>Pterocaulon sphacelatum</i>	Apple Bush	
<i>Ptilotus polystachyus</i>	Pussy Tails	
<i>Sclerolaena birchii</i>	Galvanised Burr	
<i>Senecio lautus</i>	Fire Weed	
<i>Sida acuta</i>	Spiny head Sida	
<i>Sida subspicata</i>	Queensland Hemp	
<i>Solanum ellipticum</i>	Potato Bush	
<i>Solanum esuriale</i>	Brown Potato Bush	
<i>Solanum nigrum</i>	Black Nightshade	
<i>Sonchus oleraceus</i>	Sow Thistle	
<i>Themeda triandra</i>	Kangaroo Grass	
<i>Verbena officinalis</i>	Common Verbena, Native Verbena	
<i>Verbena tenuisecta</i>	Mayne's Curse	
<i>Wahlenbergia communis</i>	Large Bluebells	
<i>Wahlenbergia gracilis</i>	Sprawling Bluebell	
<i>Xanthium occidentale</i>	Noogoora Burr	
<i>Xerochrysum bracteatum</i>	Everlasting Daisy	



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F +61 7 3173 8001

E brisbane@aurecongroup.com

W aurecongroup.com

Aurecon offices are located in:

Angola, Australia, Bahrain, Botswana,
China, Ethiopia, Hong Kong, Indonesia,
Lesotho, Libya, Malawi, Mozambique,
Namibia, New Zealand, Nigeria,
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